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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/835,127	04/12/2001	Michael L. Picciolo	NC 82, 774	7475

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EXAMINER

DO, CHAT C

ART UNIT	PAPER NUMBER
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2124

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/835,127

Applicant(s)

PICCIOLO ET AL.

Examiner

Chat C. Do

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/12/01; 3/21/02.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04/12/01 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Drawings

1. Figures 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations in all independent claims must be shown (e.g. structure of system in claims 1 and 2...) or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 4 and 14 are objected to because of the following informalities:

Claim 4 has same limitations cited in claim 2.

Claim 14 has same limitations cited in claim 11.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 2, 4-5, 7, 9, 11, 14-19, 22, and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 2, the limitations “the real part of the ratio” in line 3 and “the imaginary part of the ratio” in line 4 lack antecedence basis. For examination purposes, the examiner considers the limitations as “a real part of a ratio” and “an imaginary part of the ratio” respectively. Claims 7 and 11 have the same problem.

Re claim 4, the limitation “by solving the equation” in line 3 is unclear whether the system generates the complex adaptive weight by actually computing according to the equation or by solving the equation. For examination purposes, the examiner considers the system generates the complex adaptive weight by actually computing according to the equation. The limitation “the equation” in line 3 lacks an antecedence basis. For examination purposes, the examiner considers the limitation as an equation. In addition, the “*” operation in the equation in line 4 is unclear whether the “*” operation means complex conjugate, Hermitian, or transposed operation. For examination purposes, the examiner considers the “*” operation means complex conjugate operation. It is indefinite by the limitation “MED” the equation. Claims 5, 9, 14-15, 17, 19, 22, and 24 have the same problem.

Re claim 16, the limitation "the same target signal" lacks an antecedence basis.

For examination purposes, the examiner considers the limitation as a same target signal.

Thus, claim 18 is also rejected for being dependent on the rejected base claim 16.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 6, 8, 10, 16, and 20-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Gerlach (U.S. 4,797,807).

Re claim 1, Gerlach discloses in Figures 1 and 3 a signal processing building block for use in an adaptive signal processing system comprising: a main input channel (X_8) which receives a main input signal; an auxiliary input channel ($X_{1..7}$) which receives an auxiliary input signal; and a processing mechanism (20) that: generates a complex adaptive weight, applies the computed complex adaptive weight to a function of the main input signal and the auxiliary input signal to generate an output signal (w in Figure 1).

Re claim 6, it has similar limitations cited in claim 1. In addition, Gerlach further discloses in Figures 1 and 3 the adaptive signal comprising a plurality of building blocks (DP) arranged in a cascaded configuration for sequentially decorrelating (Figure 1) each of the input signals from each other of the input signals to thereby yield a single filtered output signal (Figure 3).

Re claim 8, Gerlach discloses in Figure 3 each building block (DP in top row) supplies the local output signal to a local output channel (32).

Re claim 10, it has similar limitations cited in claim 1. In addition, Gerlach further discloses in Figures 1 and 3 the method comprising receiving a plurality of input signals corresponding to a common target signal (abstract); inputting the input signals (X_{1-8}) into a plurality of building blocks (DP) arranged in a cascade configuration for sequentially decorrelating (Figure 1) each of the input signal from each other of the input signal (Figure 3).

Re claim 16, it is a means claim of claim 10. Thus, claim 16 is also rejected under the same rationale in the rejection of rejected claim 10.

Re claim 20, it has similar limitations cited in claim 1. In addition, Gerlach further discloses in Figures 1 and 3 an adaptive signal processing system for receiving a plurality input signals corresponding to a common target signal (abstract) and for sequentially decorrelating the input signals to cancel the correlated noise components (as decorrelation as seen in Figure 1) therefrom, the adaptive signal processing system comprising: a plurality of building blocks arranged in a cascaded configuration having N input channels and N-1 rows of building blocks (DP wherein $N = 8$), for sequentially decorrelating each of the input signals from each other of the input signals to thereby yield a single filtered output signal (Ch_1); wherein each row of building blocks has a first end building block which is fed originally by a main input channel and a last end building block opposite said first end building block (first column of Figure 3).

Re claim 21, it has same limitations cited in claim 8. Thus, claim 21 is also rejected under the same rationale in the rejection of rejected claim 8.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 2-3, 7, 11-13, 17-18, and 22-23 are rejected under 35 U.S.C. 103(a) as being obvious over Gerlach (U.S. 4,797,807), as applied to claim 1 above, in view of Amitay et al. (U.S. 4,606,054).

Re claim 2, Gerlach does not disclose the processing system generates a complex adaptive weight which comprises: a sample median value of the real part of the ratio of a main input weight training data signal to an auxiliary input weight training data signal, and a sample median value of the imaginary part of the ratio of a main input weight training data signal to an auxiliary input weight training data signal. However, Amitay et al. disclose in equations 1-2 a complex adaptive weight (Figure 7 as output of 602) which comprises: a sample median value of the real part of the ratio of a main input weight training data signal ($A_h(f)$) to an auxiliary input weight training data signal ($B_h(f)$), and a sample median value of the imaginary part of the ratio of a main input weight training data signal to an auxiliary input weight training data signal (equation 2 wherein $G(f)$ is the adaptive weight coefficients). Therefore, it would have been obvious to a

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person having ordinary skill in the art at the time the invention is made to add the complex weight values is the ratio of main input over the auxiliary input as seen in Amitary et al.'s invention into Gerlach's invention because it would enable to reduce the computation and adjust the system rapidly (col. 2 lines 3-7).

Re claim 3, it is a real part of claim 2. Thus, claim 3 is also rejected under the same rationale in the rejection of rejected claim 2.

Re claim 7, it has same limitations cited in claim 2. Thus, claim 7 is also rejected under the same rationale in the rejection of rejected claim 2.

Re claim 11, it has same limitations cited in claim 2. Thus, claim 11 is also rejected under the same rationale in the rejection of rejected claim 2.

Re claim 12, it has same limitations cited in claim 3. Thus, claim 12 is also rejected under the same rationale in the rejection of rejected claim 3.

Re claim 13, it is a imaginary part of claim 2. Thus, claim 13 is also rejected under the same rationale in the rejection of rejected claim 2.

Re claim 17, it has same limitations cited in claim 11. Thus, claim 17 is also rejected under the same rationale in the rejection of rejected claim 11.

Re claim 18, it has same limitations cited in claim 12. Thus, claim 18 is also rejected under the same rationale in the rejection of rejected claim 12.

Re claim 22, it has same limitations cited in claim 2. Thus, claim 22 is also rejected under the same rationale in the rejection of rejected claim 2.

Re claim 23, it has same limitations cited in claim 3. Thus, claim 23 is also rejected under the same rationale in the rejection of rejected claim 3.

Allowable Subject Matter

10. Claims 4-5, 9, 14-15, 19, and 24 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. U.S. Patent No. 5,790,440 to Fujii et al. disclose an apparatus for estimating filter coefficients.
- b. U.S. Patent No. 5,909,384 to Tal et al. disclose a system for dynamically adapting the length of a filter.
- c. U.S. Patent No. 4,606,054 to Amitay et al. disclose a cross-polarization interference cancellation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (703) 305-5655. The examiner can normally be reached on M => F from 7:00 AM to 4:30 PM.

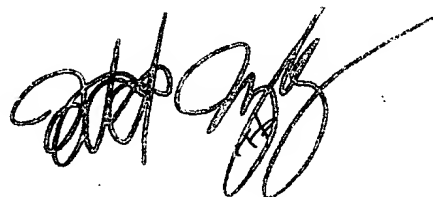
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (703) 305-9662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do
Examiner
Art Unit 2124

April 16, 2004

A handwritten signature in black ink, appearing to read 'Todd Ingberg', with a long horizontal stroke extending to the right.

**TODD INGBERG
PRIMARY EXAMINER**